

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An audio-signal-processing apparatus for processing input-audio-signals, each input-audio-signal comprising a musical sound that includes a fundamental-tone having a first frequency, and a harmonic-tone having a second frequency that is an integral multiple frequency of the first frequency, said apparatus comprising:

a band-decomposition unit unit, having a decomposition characteristic, operable operable to decompose a low frequency component of the input-audio-signals into a first frequency band and a second frequency band, the first frequency band and the second frequency band being different frequency bands, and the fundamental-tone being included in the first frequency band and the harmonic-tone being included in the second frequency banda plurality of frequency components that have different frequency bands based on the decomposition characteristic;

a harmonic-series-generating unit operable to generate a harmonic-tone component component based on at least one of the plurality of frequency components for the fundamental-tone included in the first frequency band, and a harmonic-tone component for the harmonic-tone included in the second frequency band; and

a composition unit operable to compound the input-audio-signals, and the harmonic-tone component for the fundamental-tone in the first frequency band, and the harmonic-tone component for the harmonic-tone included in the second frequency band generated by said harmonic-series-generating unit,

wherein a bandwidth of the first frequency band and a bandwidth of the second frequency band are defined based on at least one of a lowest fundamental frequency of the musical sound and a low interval limit said band decomposition unit is operable to decompose the low frequency component of each of a fundamental tone and harmonic tones of the fundamental tone initially in a same band such that each belongs to a different frequency band.

2-4. (Canceled)

5. (Currently Amended) The audio-signal-processing apparatus of claim 1, wherein the bandwidth of the first frequency band and the bandwidth of the second frequency band a band

~~width of each of the different frequency bands is~~ are from 15Hz to 50Hz.

6. (Currently Amended) The audio-signal-processing apparatus of claim 1, wherein the bandwidth of the first frequency band and the bandwidth of the second frequency band ~~a band width of each of the different frequency bands is~~ are from 15Hz to 30Hz.

7. (Previously Presented) The audio-signal-processing apparatus of claim 1, wherein said band-decomposition unit comprises a low-pass filter operable to extract frequency components in a lowest register.

8. (Previously Presented) The audio-signal-processing apparatus of claim 1, wherein said band-decomposition unit comprises a band-pass filter having a low cut-off frequency that is lower than a lowest fundamental frequency of a musical instrument.

9. (Currently Amended) The audio-signal-processing apparatus of claim 1, further comprising a delay device operable to compensate for a processing delay between the harmonic-tone component for the fundamental-tone included in the first frequency band and the harmonic-tone component for the harmonic-tone included in the second frequency band, and the input-audio-signals.

10. (Currently Amended) The audio-signal-processing apparatus of claim 1, further comprising a gain control device operable to adjust a gain of the input-audio-signals and a gain of the harmonic-tone component for the fundamental-tone included in the first frequency band and the harmonic-tone component for the harmonic-tone included in the second frequency band generated by said harmonic-series-generating unit.

11. (Currently Amended) An audio-signal-processing apparatus for processing input-audio-signals, each input-audio-signal comprising a musical sound that includes a fundamental-

tone having a first frequency, and a harmonic-tone having a second frequency that is an integral multiple frequency of the first frequency, said apparatus comprising:

a sum component output unit operable to receive input-audio-signals of a first channel and input-audio-signals of a second channel and output a sum component of the input-audio-signals of the first channel and the input-audio-signals of the second channel;

a band-decomposition unit unit, having a decomposition characteristic, operable to decompose the sum component into a low frequency component of the input-audio-signals into a first frequency band and a second frequency band, the first frequency band and the second frequency band being different frequency bands, and the fundamental-tone being included in the first frequency band and the harmonic-tone being included in the second frequency band a plurality of frequency components that have different frequency bands based on the decomposition characteristic;

a harmonic-series-generating unit operable to generate a harmonic-tone component component based on at least one of the plurality of frequency components for the fundamental-tone included in the first frequency band, and a harmonic-tone component for the harmonic-tone included in the second frequency band;

a first composition unit operable to compound the input-audio-signals of the first channel, and the harmonic-tone component for the fundamental-tone included in the first frequency band, and the harmonic-tone component for the harmonic-tone included in the second frequency band generated by said harmonic-series-generating unit; and

a second composition unit operable to compound the input-audio-signals of the second channel, and the harmonic-tone component for the fundamental-tone included in the first frequency band, and the harmonic-tone component for the harmonic-tone included in the second frequency band generated by said harmonic-series-generating unit,

wherein a bandwidth of the first frequency band and a bandwidth of second frequency band are defined based on at least one of a lowest fundamental frequency of the musical sound and a low interval limit said band-decomposition unit is operable to decompose the low frequency component of each of a fundamental tone and harmonic tones of the fundamental tone initially in a same band such that each belongs to a different frequency band.

12. (Currently Amended) An audio-signal-processing method for processing input-audio-signals, each input-audio-signal comprising a musical sound that includes a fundamental-tone with a first frequency, and a harmonic-tone with a second frequency that is an integral multiple frequency of the first frequency, said method comprising:

decomposing a low frequency component of the input-audio-signals into a first frequency band and a second frequency band, the first frequency band and the second frequency band being different frequency bands, and the fundamental-tone being included in the first frequency band and the harmonic-tone being included in the second frequency band a plurality of frequency components that have different frequency bands based on a decomposition characteristic;

generating a harmonic-tone component for the fundamental-tone included in the first frequency band, and a harmonic-tone component for the harmonic-tone included in the second frequency band based on at least one of the plurality of frequency components; and

compounding the input-audio-signals, and the generated harmonic-tone component for the fundamental-tone included in the first frequency band, and the generated harmonic-tone component for the harmonic-tone included in the second frequency band,

wherein a bandwidth of the first frequency band and a bandwidth of the second frequency band are defined based on at least one of a lowest fundamental frequency of the musical sound and a low interval limit said decomposing comprises decomposing the low frequency component of each of a fundamental tone and harmonic tones of the fundamental tone initially in a same band such that each belongs to a different frequency band.

13-15. (Canceled)

16. (Currently Amended) The audio-signal-processing method of claim 12, wherein a band width the bandwidth of each of the first frequency band and the bandwidth of the second frequency band different frequency bands is are from 15Hz to 30Hz.

17. (Currently Amended) The audio-signal-processing method of claim 12, wherein

said decomposing further comprises decomposing the low frequency component of the input-audio-signals into ~~the plurality of frequency components that have the different frequency bands based on the a~~ decomposition characteristic ~~with of~~ a low-pass filter operable to extract frequency components in a lowest register.

18. **(Currently Amended)** The audio-signal-processing method of claim 12, wherein a ~~band width of each of the bandwidth of the first frequency band and the bandwidth of the second frequency band~~ different frequency bands ~~is~~ are from 15Hz to 50Hz.

19. **(Currently Amended)** The audio-signal-processing method of claim 12, further comprising compensating for a processing delay between the generated harmonic-tone component for the fundamental-tone included in the first frequency band and the harmonic-tone component for the harmonic-tone included in the second frequency band, and the input-audio-signals.

20. **(Currently Amended)** The audio-signal-processing method of claim 12, further comprising adjusting a gain of the input-audio-signals and a gain of the generated harmonic-tone component for the fundamental-tone included in the first frequency band and the harmonic-tone component for the harmonic-tone included in the second frequency band.